

NO: R017

COUNCIL DATE: JANUARY 25, 2021

REGULAR COUNCIL

TO: **Mayor & Council** DATE: **January 15, 2021**

FROM: **General Manager, Engineering** FILE: **4818-044**

SUBJECT: **Crescent Beach and Crescent Channel Wind and Wave Monitoring Stations License Agreement**

RECOMMENDATION

The Engineering Department recommend that Council:

1. Receive this report for information; and
2. Authorize the Mayor and City Clerk to execute the License Agreement with Her Majesty the Queen in the Right of Canada, as represented by the Minister of Fisheries and Oceans (“DFO”) for the advancement of the Crescent Beach and Crescent Channel Wind and Wave Monitoring Station installations.

INTENT

The intent of this report is to obtain Council’s approval to execute a License Agreement with Her Majesty the Queen in the Right of Canada (the “Agreement”), as provided in Appendix “I”, to facilitate the installations of the Crescent Beach and Crescent Channel Wind and Wave Monitoring Stations.

BACKGROUND

In recent winter seasons, the City has experienced some overtopping events of the foreshore dykes in the Boundary Bay area. Having accurate local data on the coastal environment will assist in coastal flood protection upgrades and emergency preparation for Surrey’s residents. The stations will also allow the City to monitor sea level rise, address local residents’ concerns about the rate of sea level rise locally, and develop potential mitigation measures. This information will support ongoing climate adaptation set out in the Surrey Coastal Flood Adaptation Strategy and be publicly available for marine traffic and emergency preparedness staff.

Currently there is no storm surge, wind or wave monitoring in the area. Most of the coastal information that the City relies upon comes from Pt. Atkinson in West Vancouver, which does not experience the same weather/storm events as experienced in the Boundary Bay area. The proposed equipment is to be used for real-time monitoring of the local conditions for emergency response, long-term sea level rise monitoring and will also link into the storm surge monitoring network (BC Storm Surge) so advance storm modelling can be done for early warning of significant coastal weather events. The estimated cost for implementing this is \$50,000.

Key to coastal protection and management design is information on wind and wave conditions. This information is crucial for the City to be able to look into the future planning of Surrey's coastal infrastructure; therefore, staff are informed on what heights and levels are needed to start planning, seeing as these types of storm events are becoming more frequent. Data collected from the sites will support the implementation of the Boundary Bay Foreshore Enhancements, a part of the City's Disaster Mitigation and Adaptation Fund ("DMAF") projects.

DISCUSSION

The City has done a comprehensive reconnaissance of potential installations and identified the Crescent Channel Marker (Figure 1) and Crescent Beach Channel Marker (Figure 2) as the preferred locations for installation. The two channel markers are owned and operated by the Canadian Coast Guard ("CCG"). It is both cost-effective and environmentally friendly to utilize their infrastructure to attach the wave and wind sensors.

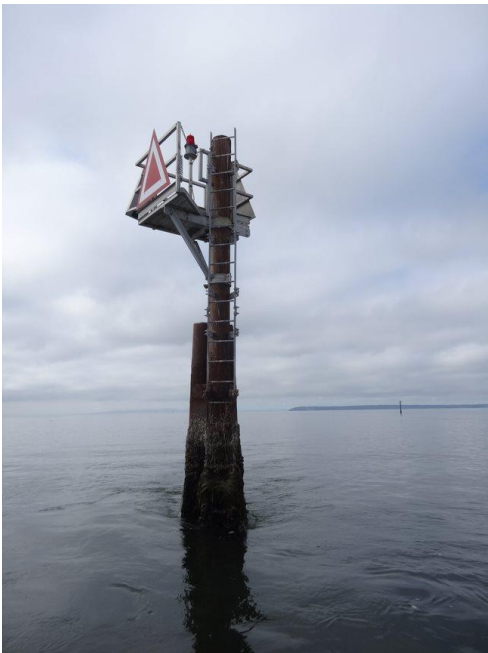


Figure 1: Crescent Channel Marker located 0.5 km offshore

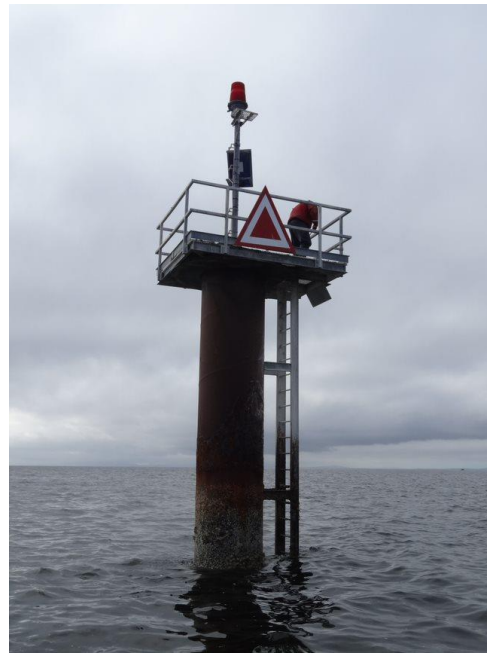


Figure 2: Crescent Beach Channel Marker located 5 km offshore

The information gathered from the proposed installments will be Open Data for anyone to use, including the Federal and Provincial governments as well as the public. It will also be used to add Boundary Bay into the Storm Surge BC warning system found at <http://stormsurgebc.ca/index.html>. These stations will provide monitoring information that will be transmitted to a data hosting site (www.FlowWorks.com) using cellular phone systems for near real-time monitoring.

FlowWorks is the current site where the City hosts all current and historical data from the Flow, Rain, OceanMet, Slope, and Snowfall Monitoring & Maintenance system. This includes 11 rainfall gauges, 17 hydrometric stations (seven water level and 10 streamflow stations), one water quality station, one slope stability station, one snow depth sensor, and one wind sensor. Recently in 2019, the City installed a wind monitoring station at the Colebrook Pump Station. These existing stations will be linked with the proposed wind and wave stations.

The live information received from these stations will enable staff to track potential wave surges and storms that can affect Surrey's coastal area. The data that is collected from these stations will also assist staff to make the right decisions in the City's Mud Bay Foreshore enhancement project and monitor the effect of climate change on Surrey's coastal area.

Legal Services Review

Legal Services has reviewed the Agreement and has no concerns.

FUNDING

This project will be funded from the approved 2021 Drainage Utility Budget and is eligible for up to 41.5% of costs to be reimbursed by the Federal Government as part of the DMAF project.

SUSTAINABILITY CONSIDERATIONS

The work of these installations supports the objectives of the City's Sustainability Charter 2.0. In particular, this work relates to Sustainability Charter 2.0 themes of Built Environment and Neighbourhoods, and Public Safety. Specifically, this project supports the following Desired Outcome ("DO"):

- Energy and Climate DO6: The City anticipates changing weather patterns and sea level rise as a result of climate change, and implements appropriate infrastructure, land use planning and emergency response solutions that will be resilient over the long term.

CONCLUSION

Based on the above discussion, the Engineering Department recommend that Council receive this report as information and authorize the Mayor and City Clerk to execute the Third Party Site Usage Agreement between DFO and the City as provided in Appendix "I".

Scott Neuman, P.Eng.
General Manager, Engineering

YY/cc

Appendix "I" – Third Party Site Usage License Agreement

LICENCE AGREEMENT

Boundary Bay Crescent Beach and Crescent Channel Markers

(hereinafter referred to as the "Agreement")

THIS AGREEMENT is effective the 1st day of February, 2021,

BETWEEN: HER MAJESTY THE QUEEN IN RIGHT OF CANADA
as represented by the Minister of Fisheries and Oceans
9860 West Saanich Road
Sidney, BC
V8L 4B2
(hereinafter referred to as the "DFO")

AND: CITY OF SURREY
13450 – 104 Avenue
Surrey, BC
V3T 1V8
(hereinafter referred to as the "Licensee")

WHEREAS:

- A. DFO operates 2 channel markers, LL 299.50 Crescent Beach and LL 299.60 Crescent Channel, located in Boundary Bay (hereinafter referred to as the "Lands").
- B. The Licensee, wishes to conduct a wind and wave study in the area that has the support of The Ministry of Forest, Lands, Natural Resource Operations and Rural Development.
- C. The Licensee has requested a licence to use and occupy a portion of the DFO site shown circled in red on the plan attached hereto as Schedule "A" (hereinafter referred to as the "Licensed Area") to install equipment for the wind and wave monitoring stations on DFO facilities, in connection with the installation and operation of Licensee's equipment as described and illustrated hereto as Schedule "B" (hereinafter referred to as the "Equipment").
- D. The parties have agreed to enter into this Agreement to govern their relationship in respect of the licence granted by DFO to the Licensee.

IN CONSIDERATION of the covenants, terms, conditions and agreements contained in this Agreement and other goods and valuable consideration, the receipt and sufficiency of which each party acknowledges, the parties agree as follows:

1. LICENCE AND LICENSED AREA

- .1 DFO hereby grants to the Licensee a non-exclusive licence to the Licensed Area to install, remove, replace, maintain and operate the Equipment, including access to and from the Licensed Area on the following terms:

- .a only qualified technicians employed or contracted by the Licensee, and have obtained security clearance from the DFO Security Department will be allowed access to the Licensed Area for the purpose of installation, removal, replacement, maintenance, operation and repair of the Equipment; and
 - .b the Licensee and its technicians shall comply with DFO's access protocol attached hereto as Schedule "C" (hereinafter referred to as "DFO Access Protocol") to this Agreement.
- .2 The Licensee may amend Schedule "B" from time to time with the prior written consent of DFO. Any amendment to Schedule "B" is an amendment to this Agreement and must be signed by both parties and attached to this Agreement.
- .3 The Licensee agrees that:
- .a the rights granted under this Agreement do not constitute any title to or interest in land nor do they entitle the Licensee to exclusive possession of the Licensed Area;
 - .b DFO may grant other persons the right to occupy and use the Licensed Area and the DFO facilities and the Licensee will not interfere with the rights of those other persons to enter onto and use the Licensed Area;
 - .c the Licensee's rights under this Agreement are at all times subject to the DFO's rights and interests in the Licensed Area;
 - .d DFO may use the Licensed Area at any time for any purpose relating to the conduct of DFO's business and for operating and maintaining DFO's works at the Licensed Area or on adjacent lands; and
 - .e the Licensee must comply with any rules and procedures regulating the use and administration of the Licensed Area as DFO, acting reasonably, may adopt from time to time.

2. TERM

- .1 This Agreement will commence on the 1st day of February, 2021 and will terminate on the 31st day of January, 2028 (hereinafter referred to as the "Term") unless cancelled in accordance with the terms hereof.
- .2 Upon or prior to the termination of this contract, the Licensee will be given the option to resubmit an application for renewal.

3. LICENCE FEE AND FINANCIAL ARRANGEMENTS

- .1 During the Term of this Agreement, the Licensee shall hereby pay to DFO an annual licence fee (hereinafter referred to as the "Licence Fee") of One Dollar (\$1.00), receipt of which is hereby acknowledged.
- .2 Every year thereafter during the Term, DFO will have the rights to review the Licence Fee payable during the next year of the Term or the remaining balance of the Term, whichever is less. If DFO exercises this right, DFO will provide the Licensee with at least ninety (90) days prior written notice of the new amount for the Licence Fee which will be determined by DFO having regard to the then current fair market rates.
- .3 If at any time during the Term, DFO is required to pay additional fees, such as, but not limited to permit fees, which are directly attributable to the Licensee's use and occupation of the Licensed Area, then the Licensee, at DFO's request, will reimburse DFO for those additional fees by an equivalent amount.

- .4 If at any time during the Term, DFO is required to pay additional costs, such as, but not limited to, utility costs, in operating the DFO site arising from or attributed to the Equipment, then the Licensee, at DFO's request, will reimburse DFO for those additional costs by an equivalent amount.
- .5 Where applicable, the Licensee agrees to share the costs associated with the following:
 - .a improvements for physical infrastructure such as towers, racks, poles, shelters, fence, gates, or locks at the Licensed Area;
 - .b extraordinary access to the Licensed Area;
 - .c technical maintenance;
 - .d access road maintenance;
 - .e inspections; and
 - .f transportation for site visits conducted jointly by the parties.

4. APPROVED PLANS AND STANDARDS

- .1 The Licensee will install and locate the Equipment on the Licensed Area in accordance with the approved plans.
- .2 No equipment, other than that identified in writing and approved by DFO-CCG in the original site usage agreement will be installed. Any requests to change the original configuration must be submitted in writing. These requests will be subject to the same evaluation and approval process as the original request. Any additional costs incurred by DFO-CCG, as a result of such requests, will be the responsibility of the third party.
- .3 The Licensee will cause all work relating to the installation, removal, replacement, maintenance, operations and repair of the Equipment to be done in a good and workmanlike manner, in accordance with sound engineering standards and in accordance with the requirements and conditions specified by DFO.
- .4 Within sixty (60) days of the completion of the installation of any Equipment or at DFO's request from time to time, the licensee must supply to DFO engineer-designed as-built drawings providing complete specifications and inventory of the installed Equipment.
- .5 After installing the Equipment in accordance with the approved plans, the Licensee will, if requested to do so by DFO and at its own expense, conduct a Safety Code 6 test for radio frequency emissions and provide a report based on the actual emission measurements (hereinafter referred to as the "Safety Report") to DFO within sixty (60) days of the completion of installation.
- .6 The Safety Report must be prepared based on measurements of emissions throughout the DFO facilities and must comply with the requirements in *Industry Canada Guideline GL-08 November 2010*, as amended, updated, renamed or replaced from time to time.
- .7 The Equipment, together with all other installations on the Licensed Area emitting radio-frequency electro-magnetic fields existing on the date of the installation of the Equipment, must not exceed the most restrictive or stringent standards stated for the maximum permissible exposure (hereinafter referred to as "MPE") limits as provided in Safety Code 6. Based on the current Safety Code 6, the Equipment, together with all the existing installations, shall not exceed the MPE for the general public in an uncontrolled environment.
- .8 The Safety Report must include:

- .a radiofrequency (hereinafter referred to as "RF") measurements with the Equipment switch off (to establish a baseline); and
- .b RF measurements with the Equipment switch on.
- .9 All drawings and reports prepared in accordance with this section must be approved by a qualified Professional Engineer.
- .10 If the installation does not pass the Safety Code 6 test, all transmissions must cease until modifications are completed and the installation passes the Safety Code 6 test.
- .11 The Licensee will not import any fill material onto the Licensed Area.
- .12 The Licensee will not stockpile or burn any materials on the Licensed Area and adjoining lands.
- .13 The Licensee will not permit any third party to use the Equipment.
- .14 The Licensee will not commit or allow any willful or voluntary waste or destruction of the Licensed Area and adjoining lands, or do anything that may become a nuisance to DFO or other occupiers of the Lands.

5. LICENSEE'S OBLIGATIONS

- .1 The Licensee will:
 - .a comply with all applicable federal, provincial, municipal and local statutes, bylaws, orders and regulations relating to the installation, removal, replacement, maintenance, operation and repair of the Equipment;
 - .b assume all costs associated with the installation and maintenance of the Equipment. If power problems arise as a result of the operation of the Equipment, the Licensee shall be wholly responsible to rectify the power problems at the Licensee's expense;
 - .c at the request of DFO, provide at the Licensee's expense an interference analysis for all transmitting and receiving frequencies to be used by the Licensee at the Licensed Area;
 - .d ensure that the Equipment and any other property the Licensee may have at the Licensed Area is maintained in a good and safe state of repair and in a clean and orderly condition;
 - .e repair or restore, at the Licensee's expense, any damage caused to DFO's or any other licensee's property caused by the acts or omissions of the Licensee, its technicians, agents or invitees;
 - .f cause to be discharged any lien encumbrance upon the Lands that arises out of the Licensee's use of the Licensed Area or the ownership, construction or repair of the Equipment. The Licensee will cause the lien or encumbrance to be discharged within thirty (30) days after the date the Licensee first has knowledge of the lien or encumbrance; and
 - .g use the Licensed Area solely for the installation, maintenance and operation of the Equipment for communication purposes.

6. DFO'S OBLIGATIONS

- .1 DFO will:

- .a cooperate with the Licensee, at the Licensee's expense, including executing all necessary and reasonable authorizations requested by the Licensee in order for the Licensee to obtain all necessary authorizations from all government authorities for the installation, maintenance and operation of the Equipment; and
- .b execute all further documents and perform all reasonable acts for the better, assuring the Licensee's peaceable right to enjoy the rights granted by this Agreement.

7. NON-INTERFERENCE

- .1 During the Term or any renewal thereof, DFO shall have the right to lease, license or permit anyone to use any part of the Licensed Area for the purposes of the transmission, emission or reception of signals by wire, radio, visual or other systems and any other purpose incidental thereto or to install any structure or equipment thereon to the extent that such leasing, licensing or permission to use will not interfere with the use and operation of the communications system.
- .2 Should interference develop between the signals of DFO and those of the Licensee as a result of the Licensee changing or adding additional pre-authorized equipment or parts, both parties shall cooperate to eliminate the interference. The Licensee shall bear the full responsibility and expense to eliminate the interference; failure to do so will result in the immediate shutdown or removal of the Equipment, and the Licensee shall waive in advance all claims, demands, loss, costs, damages, actions, or suits against Her Majesty the Queen in Right of Canada, DFO, and its officers and servants resulting of this immediate shutdown or removal.
- .3 Should interference develop between the signals of DFO and those of the Licensee as a result of DFO changing or adding additional equipment or parts, both parties shall cooperate to eliminate the interference. DFO will be responsible for the expense to eliminate the interference. However, in the event of a dispute, DFO equipment and facilities will always have top priority and the Licensee shall waive in advance all claims, demands, loss, costs, damages, actions, or suits against Her Majesty the Queen in Right of Canada, DFO, and its officers and servants resulting of any changes or additions.
- .4 In the event that any of the Equipment (including antenna and equipment and/or any modifications thereof), from time to time, cause interference in any way with the facilities of any prior licensee of the tower at such time, the Licensee shall take steps at its own expense to eliminate such interference.

8. ENVIRONMENT PROTECTION

- .1 In this Agreement:
 - .a "Hazardous Materials" means all explosives, radioactive materials, pollutants, contaminants, hazardous or toxic substances, special waste or other waste (include chlorobiphenyls), the storage, use, manufacture, or release of which into the environment is prohibited, controlled or regulated under any laws, regulations, orders, bylaws, permits or lawful requirement of any governmental authority in respect of the protection of the natural environment, or of plant, animal or human health, or in respect of the regulation and uses of such wastes and substances; and
 - .b "Contamination" includes but is not limited to all substances that fall within the definition of "deleterious substance" within the meaning of *the Fisheries Act*, R.S.C. 1985, c. F-14, or within the definitions of "waste" and "special waste" in the *Waste Management Act*, R.S.B.C. 1996, c.482 or that are toxic as described in section 4 of the *Canadian Environmental Protection Act*, S.C. 1999, c.33, and also includes all substances that come to fall within those definitions and descriptions which are in a quantity or concentration within the meaning of section 64 of the *Canadian Environmental Protection Act*.

- .2 The Licensee will not place, store, use, manufacture or release any Hazardous Materials on the Licensed Area or on any adjacent lands.
- .3 The Licensee is responsible for any environmental damage and Contamination to the Licensed Area or any adjoining lands, and agrees to remove or to take remedial action with regard to any environmental damage, Hazardous Materials or Contamination on the Licensed Area or on any adjoining lands as a result of the Licensee's activities.
- .4 The Licensee will be responsible for and indemnify and save harmless Her Majesty the Queen in Right of Canada, DFO, and its officers and servants from and against all claims, demands, loss, costs, damages, actions, suits or other proceedings by whomsoever made, sustained, brought or attributable to environmental damage or Contamination caused by the activities of the Licensee under this Agreement, or in respect of any Hazardous Materials placed, stored, used, manufactured or released on the Licensed Area by the Licensee, including all clean-up costs and legal and professional fees.
- .5 The obligations of the Licensee hereunder relating to the environmental damage, Hazardous Waste and to any Contamination will survive the expiry or earlier termination of this Agreement.

9. INDEMNITY

- .1 Subject to the provisions of the *Crown Liability and Proceedings Act*, the Licensee agrees to indemnify and save harmless Her Majesty the Queen in Right of Canada, DFO, and its officers and servants from and against all claims, demands, loss, costs, damages, actions, suits or other proceedings whatsoever, based upon or arising out of the execution of this Agreement and the negligent acts or omissions of the Licensee while acting within the scope of their duties or employment in connection with this Agreement.

10. LICENSEE'S INSURANCE

- .1 The Licensee will, at its sole cost and expense during the Term take out and maintain in full force and effect, commercial general liability insurance with respect to the occupancy by the Licensee of the Licensed Area.
- .2 If requested by DFO, the Licensee agrees to provide DFO with certificates of insurance that confirm compliance by the Licensee with the insurance requirements set out herein, including proof of renewal of each policy during the Term.

11. TERMINATION

- .1 Either party may terminate this Agreement by giving ninety (90) days prior written notice to the other party.
- .2 DFO may terminate this Agreement, if and whenever the Licensee breaches a term of this Agreement and such breach is not remedied within thirty (30) days after receipt of a written notice from DFO.
- .3 The Equipment shall at all times remain the property of the Licensee notwithstanding that such items may be annexed or affixed to a structure at the Licensed Area and shall at any time and from time to time be removable in whole or in part by the Licensee. Upon the expiry or sooner termination of this Agreement, the Licensee shall peaceably surrender the Licensed Area to DFO and remove the Equipment at its own expense and shall restore the Licensed Area and DFO facilities to original pre-agreement conditions. The Licensee's removal of the Equipment shall be carried out under the supervision of DFO and in such a manner so as not to interrupt DFO or other licensees at the Licensed Area.

- .4 DFO will not be liable to compensate the Licensee for damages, costs or losses resulting from the exercise of DFO's right of termination.

12. NOTICES

- .1 Where service of a notice or a document is required under this Agreement, the notice or document will be in writing and will be deemed to have been served if delivered or mailed to the intended party at its address specified under subsections .a and .b below. The notice or document will be deemed to have been received on the day it is delivered, if delivered personally, or five (5) days after the date it was mailed. Either party may, by notice in writing to the other, specify another address for service of notices under this Agreement.

- .a All notices and communications to DFO in connection with this Agreement shall be addressed to:

Fisheries & Oceans Canada
Real Property, Safety and Security
Attention: Senior Real Estate Officer
9860 West Saanich Road
Sidney, BC
V8L 4B2

- .b All notices and communications to the Licensee in connection with this Agreement shall be addressed to:

City of Surrey
Attention: General Manager, Engineering
13450 – 104 Avenue
Surrey, BC
V3T 1V8

13. OTHER PROVISIONS

- .1 This Agreement including the attached Schedules A, B, and C, and any other documents referred to in this Agreement constitutes the entire Agreement of the parties and may not be amended or modified except by a written instrument executed by both parties and attached as an addendum to an executed copy of this Agreement. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective heirs, personal representatives, successors and permitted assigns. If the Licensee constitutes more than one person, every representation, covenant and agreement on the part of the Licensee will be a joint and several representation, covenant, and agreement of the persons constituting the Licensee.
- .2 Invalid provisions are severable and will not impair the validity of the balance of this Agreement.
- .3 Any condoning, excusing or overlooking by DFO of any default, breach or non-observance of any covenant, proviso or condition of this Agreement does not operate as a waiver of DFO's rights hereunder in respect of any subsequent defaults, breaches or non-observances and does not defeat or affect in any way the rights of DFO in respect of any subsequent defaults, breaches or non-observances.
- .4 The Licensee may not assign, sublicense, or transfer this Agreement.
- .5 The Licensee will not permit any third party to use the Licensed Area, Equipment, and DFO facilities.

- .6 The Licensee will not commit or allow any willful or voluntary waste or destruction of the Licensed Area and adjoining lands.
- .7 This Agreement is intended to constitute a licence and not to create any tenancy, agency or partnership. Possession of the Licensed Area is retained by DFO, subject to the rights of the Licensee under this Agreement.
- .8 No member of the House of Commons shall be admitted to any share or part of this Agreement or to any benefit arising therefrom.
- .9 Any notice required shall be in writing and may be given by personal delivery or sent by registered mail or, if other than the delivery of an original document, by facsimile transmission or electronic mail to the parties set out under section 12, NOTICES.
- .10 Time is of the essence in this Agreement.

IN WITNESS WHEREOF the parties hereto have executed this Agreement as of the date first above written.

Executed on behalf of HER MAJESTY THE QUEEN IN RIGHT OF CANADA
as represented by the Minister of Fisheries and Oceans,
Canadian Coast Guard:

Roger Girouard, Assistant Commissioner
Canadian Coast Guard, Western Region

Executed by the Licensee:

Doug McCallum, Mayor
Authorized Signatory for City of Surrey

Jennifer Ficocelli, City Clerk
Authorized Signatory for City of Surrey

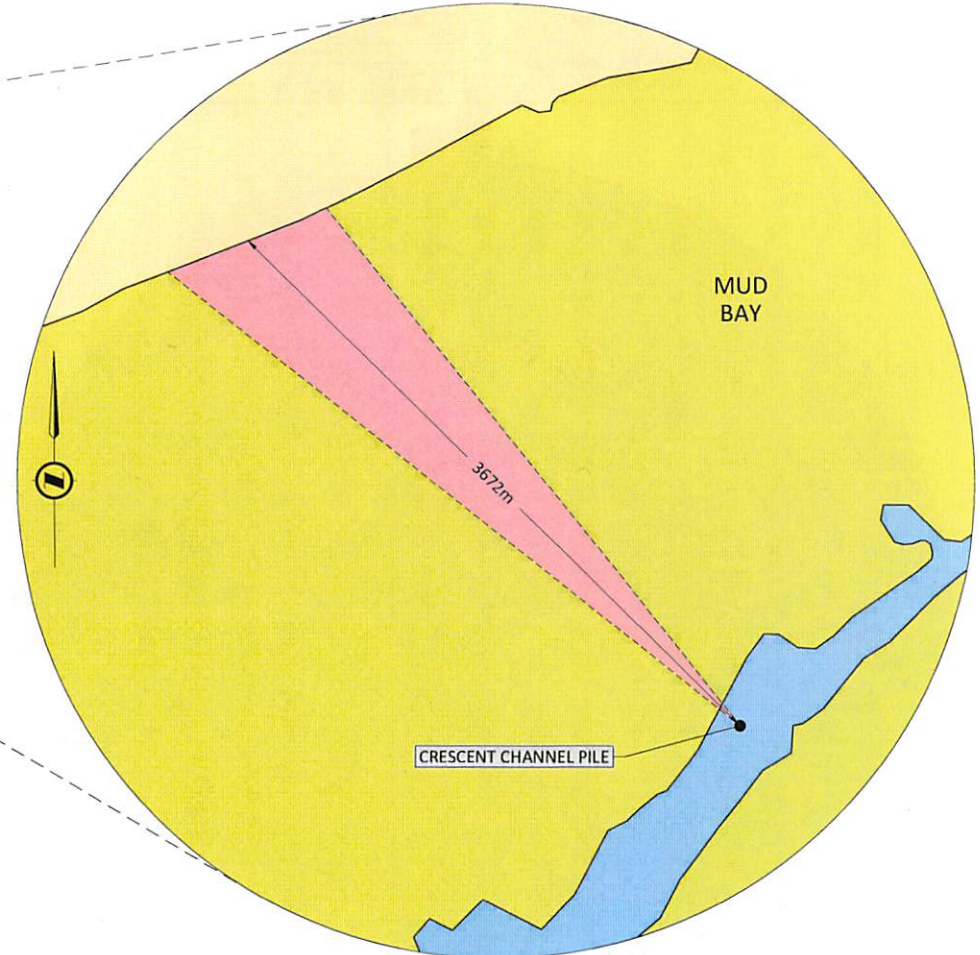
Schedule A

(Licensed Area)

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LOCATION MAP
SCALE = 1:100,000



OBSCURED AREA
SCALE = 1:25,000

NOTES:

1. BACKGROUND IMAGERY OBTAINED FROM NAVIONICS, NOT GEOREFERENCED.
2. PILE POSITIONS OBTAINED WITH 'RECREATIONAL' GPS.

CITY OF SURREY

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consultants
30 Gostick Place
North Vancouver, BC
Canada V7M 3G3
Office: 604.980.6011
Fax: 604.980.9264
www.nhcweb.com

REVISIONS

| NO. | DATE | DESCRIPTION |
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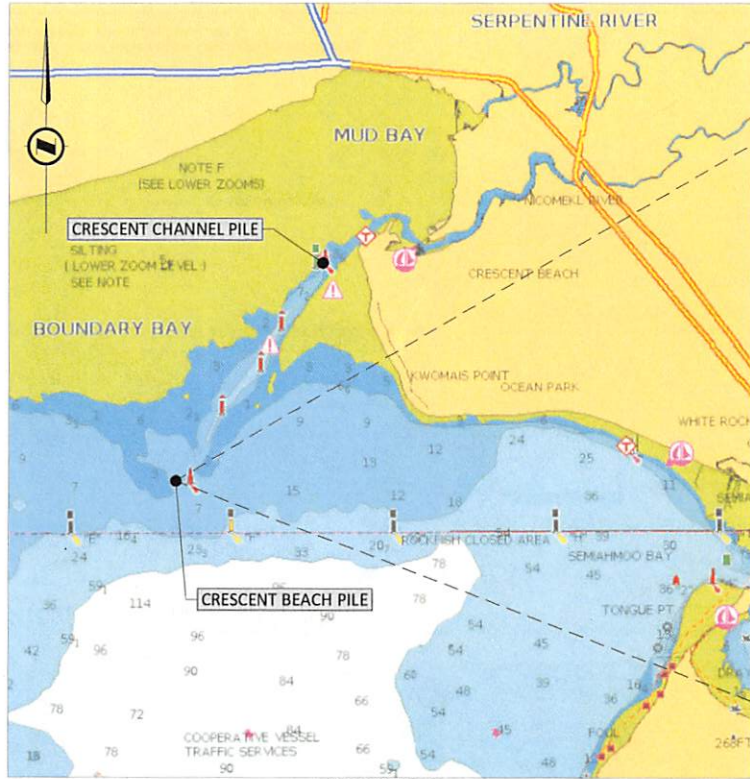
DRAWING INFORMATION

| | |
|-------------|---------------|
| DATE | 17 May 2019 |
| DESIGNED BY | EB |
| DRAWN BY | KEH |
| CHECKED BY | PK |
| SHEET SIZE | B (11" x 17") |

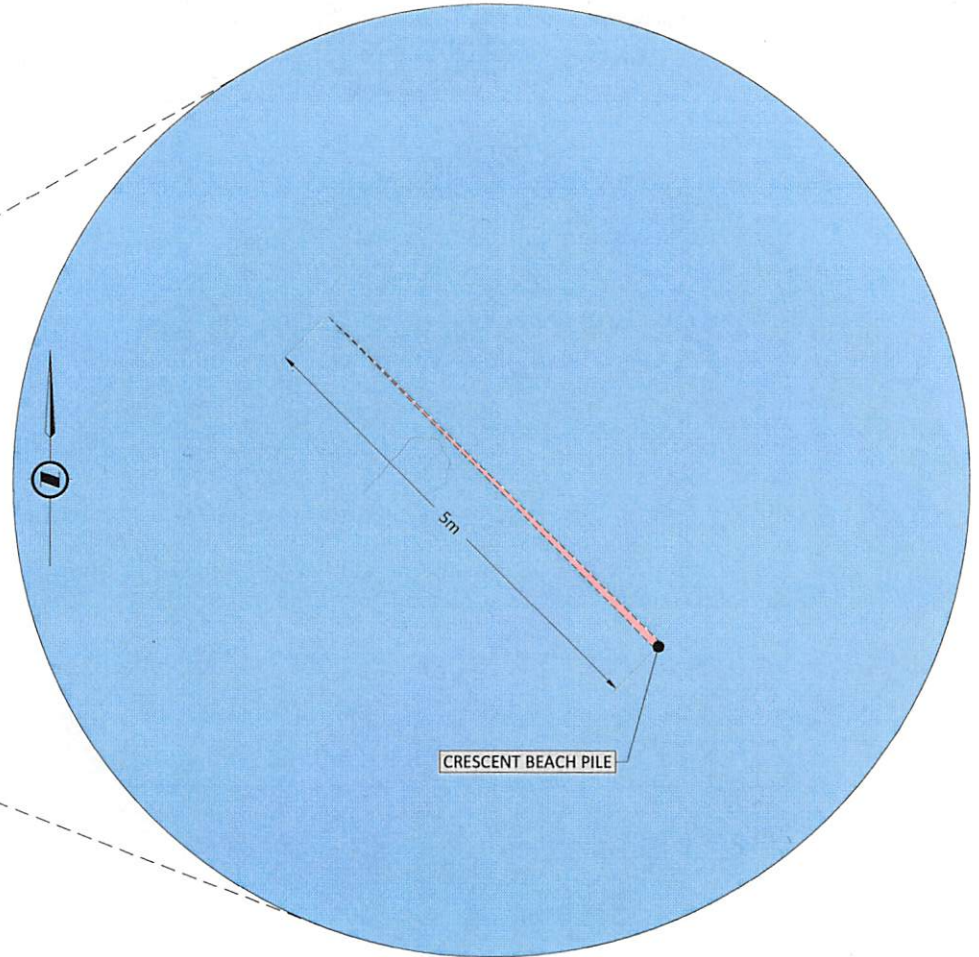
CITY OF SURREY
OCEANMET MONITORING
CRESCENT CHANNEL PILE

| | |
|----------------|-------------|
| PROJECT NUMBER | 3004163 |
| DRAWING NUMBER | 3004163-001 |
| SHEET NUMBER | FIG. 001 |
| REVISION | |

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LOCATION MAP
SCALE = 1:100,000



OBSCURED AREA
SCALE = 1:50

NOTES:

1. BACKGROUND IMAGERY OBTAINED FROM NAVIONICS, NOT GEOREFERENCED.
2. PILE POSITIONS OBTAINED WITH 'RECREATIONAL' GPS.

CITY OF SURREY

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REVISIONS

| NO. | DATE | DESCRIPTION |
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DRAWING INFORMATION

| | |
|-------------|---------------|
| DATE | 17 May 2019 |
| DESIGNED BY | EB |
| DRAWN BY | KEH |
| CHECKED BY | PK |
| SHEET SIZE | B (11" x 17") |

CITY OF SURREY
OCEANMET MONITORING

CRESCENT BEACH PILE

| | |
|----------------|-------------|
| PROJECT NUMBER | 3004163 |
| DRAWING NUMBER | 3004163-002 |

SHEET NUMBER

FIG. 002

| | |
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| REVISION | |
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Schedule B

(Licensee's Equipment and Approved Plans)

TO: Northwest Hydraulic Consultants (NHC)
Attn: Elizabeth Baird, Anthony Reynolds, & Greg
Grzybowski

FROM: Bradley Schwalger / Andrew Boettcher

MEMO

PROJECT: Crescent Beach & Crescent Channel Wind Wave Monitoring Station - Northwest Hydraulic Consultan REF #: 200092
DATE: 8 June 2019

aDB has reviewed the proposed components and loading impacts at two existing offshore navigation structures named Crescent Beach Station (CBS) and Crescent Channel Station (CCS).

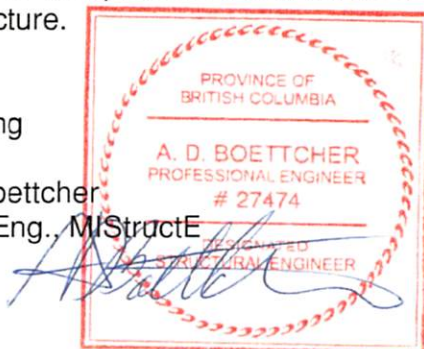
Following aDB's review of the anticipated loading, at a maximum expected wind of 100km/hr, for the specific equipment provided in NHC's Ocenmet drawings 3004163-2001, dated 5 May 2020, there will be no expected negative impact to the existing structure under the design loading conditions. aDB drawings, 200092-CC1&CC2 and 200092-CS1&CS2, have included the localized unfactored loading at each station to aid any future reviews of additional co-location equipment.

In respects to the specific mounting location of the CBS anemometer mast, the existing handrail adequately restrains the maximum anticipated loading. It should be noted that under gale wind conditions the site must be cleared of all personnel, as the railing system is not intended to simultaneously restrain the fall protection maximum loading and additional wind loading induced by the mast. Under a guideline of 60 km/hr, higher than Worksafe BC - Staging Max wind speed 40km/hr, the fall protection guardrail, with simultaneous loading conditions, is not negatively impacted by the additional loading induced by the mast.

We believe this is acceptable solution for the intended use and occupancy of this offshore navigation structure.

Reviewed by:
aDB Engineering


Per: Andrew Boettcher
P.Eng., Struct.Eng., M.STRUCT.E



June 10, 2020

Prepared by:
aDB Engineering

Per: Bradley Schwalger
E.I.T

SIGNED: 

CITY OF SURREY

OCEANMET STATION DETAILED DESIGN

ISSUED FOR CONSTRUCTION

| SHEET NO. | SHEET DESCRIPTION | REVISION |
|-----------|--|----------|
| 1 | DRAWING INDEX AND LOCATION MAP | 1 |
| 2 | CRESCENT BEACH STATION - PLAN AND ELEVATION VIEW | 1 |
| 3 | CRESCENT CHANNEL STATION - PLAN AND ELEVATION VIEW | 1 |
| 4 | DETAILS | 1 |



KEY MAP
NOT TO SCALE

- NOTES:**
- EXISTING STATION INFORMATION TAKEN FROM CANADIAN COAST GUARD PACIFIC REGION DFO-CCG FACILITIES ENGINEERING DRAWING NO. 20655 & 20567
 - ELEVATION AND PLAN VIEWS ARE DRAWN IN METRIC AND REFERENCE THE NAD83 HORIZONTAL AND CGVD28 VERTICAL DATUM. DETAIL VIEWS ARE PRESENTED IN IMPERIAL DIMENSIONS AND ARE SHOWN IN DECIMAL INCHES FOR FABRICATION PURPOSES
 - WATER LEVELS ARE APPROXIMATE AND WERE TAKEN FROM DFO-CCG FACILITIES ENGINEERING DRAWING LL 299.5 CRESCENT BEACH 3 PILE DOLPHIN INSTALLATION DETAILS. WATER LEVELS WERE TRANSLATED TO ELEVATIONS REFERENCE THE CGVD28 GEODETIC DATUM AS THE DATUM REFERENCE ON THE LL 299.5 IS BELIEVED TO BE INCORRECT.
 - THE POSITION AND DIMENSIONS OF THE EXISTING NAVIGATION EQUIPMENT WERE ADJUSTED FROM FIELD MEASUREMENTS AND PHOTOGRAPHS COLLECTED DURING THE NHC 26 SEPTEMBER 2018 FIELD VISIT. DETAILS OF EXISTING NAVIGATION EQUIPMENT IS LIMITED DUE TO THE SIMPLIFIED REPRESENTATION OF THE STRUCTURE ON THE ORIGINAL DRAWINGS
 - THE STRUCTURAL REVIEW OF THE EXPECTED LOADING FORCES ON THE EXISTING STATIONS FROM THE WAVE AND WIND MONITORING INSTRUMENTATION WAS COMPLETED BY aDB ENGINEERING AND IS DOCUMENTED IN THE CRESCENT BEACH & CRESCENT CHANNEL WIND WAVE MONITORING STATION MEMO REF 200092 DATED 8 JUNE 2019 AND DRAWINGS 200092 CB1-2 AND CC1-2.
 - THE DESIGN LOADING FORCES ON THE PROPOSED INSTRUMENTATION MOUNTS WERE CALCULATED USING A DESIGN WIND SPEED OF 100 km/hr. LOADING FORCES FROM WAVE ACTION ON THE WAVE SENSOR MOUNT AT THE WATER LEVEL ARE NOT EXPECTED TO INCREASE LOADING FORCES TO THE STRUCTURE ITSELF SINCE THE WAVE SENSOR AND TRACK DO NOT SUBSTANTIALLY INCREASE THE STRUCTURES FOOTPRINT OR PROFILE IN THE WATER COLUMN. HOWEVER, IT IS RECOMMENDED THAT ANY DEBRIS OR VEGETATION GROWTH BE REMOVED FROM THE WAVE SENSOR TRACK DURING TRI-ANNUAL MAINTENANCE TO MINIMIZE ANY ADDITIONAL WAVE OR CURRENT LOADING POTENTIAL.



PLAN
1:30,000



SURREY CITY OF SURREY
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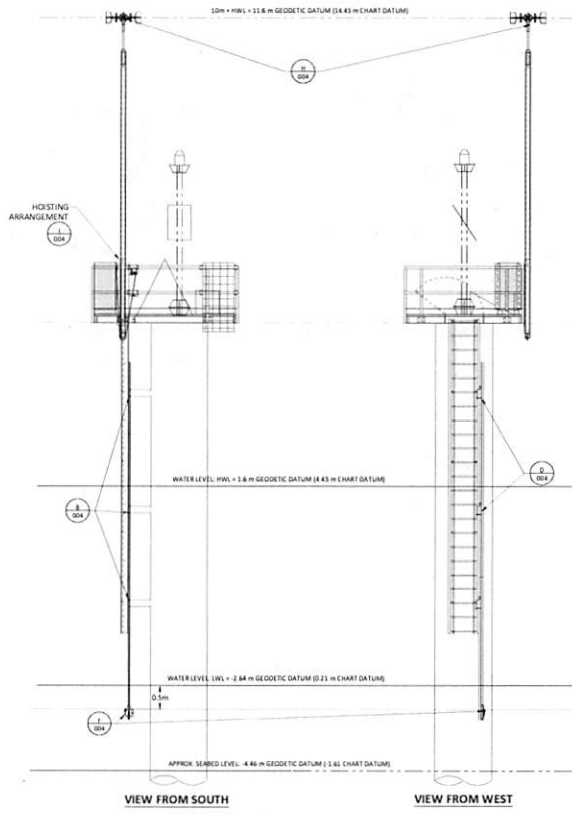
| REVISION | DATE | DESCRIPTION |
|----------|-------------|-------------------------|
| 1 | 12 JUN 2020 | ISSUED FOR CONSTRUCTION |

| DRAWING INFORMATION | |
|---------------------|---------------|
| DATE | 12 Jun 2020 |
| DESIGNED BY | ADR |
| DRAWN BY | PFJ / CSM |
| CHECKED BY | GMG/GFL |
| SHEET SIZE | D (22" x 34") |

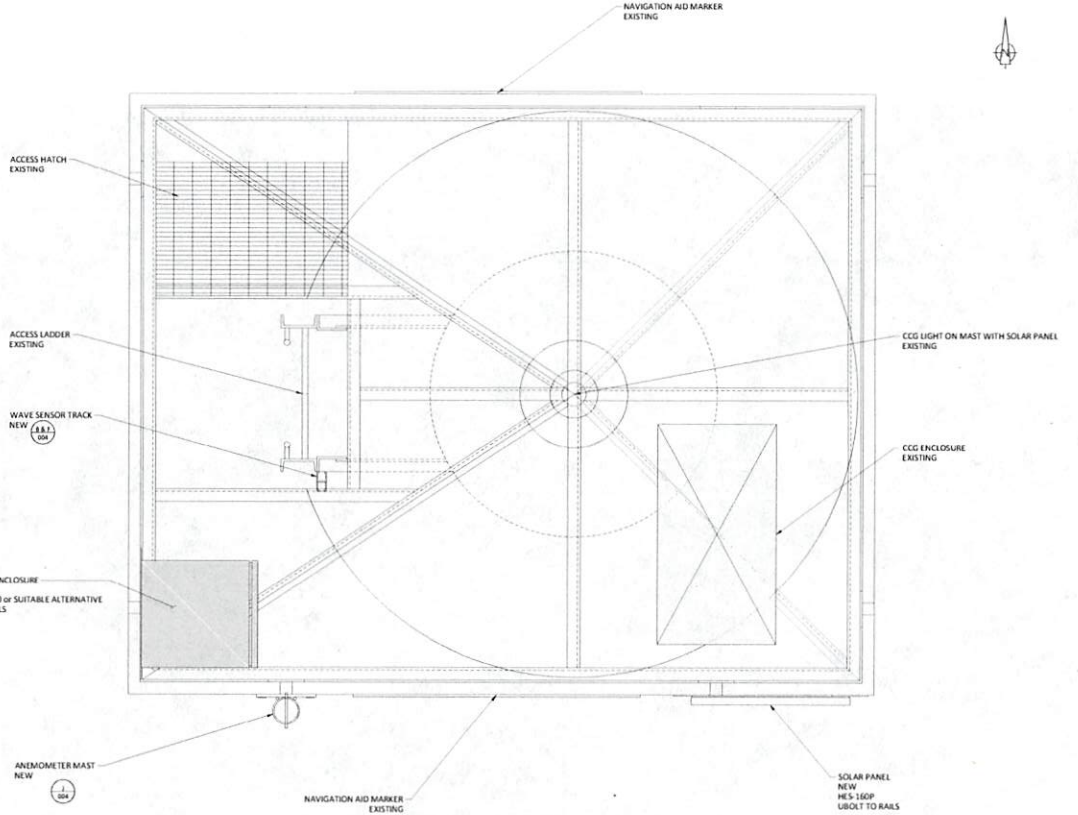
CITY OF SURREY OCEANMET DETAILED DESIGN

DRAWING INDEX AND LOCATION MAP

| | |
|----------------|---------------|
| PROJECT NUMBER | 2004163 |
| DRAWING NUMBER | 000100 000100 |
| SHEET NUMBER | 001 |
| REVISION | 1 |



ELEVATION VIEW: CRESCENT BEACH STATION
1:50



PLAN VIEW: CRESCENT BEACH STATION
1:30

NOTES:
 1) ELEVATIONS FOR TIDAL FLUCTUATIONS AND SEABED LEVEL WERE TAKEN FROM DFO-CCG FACILITIES ENGINEERING LL 299.5 CRESCENT BEACH 3 PILE INSTALLATION DETAILS DRAWING NO. 20567 AND TRANSLATED TO THE CGD/2028 GEODETIC DATUM
 2) IT IS ASSUMED THAT HWL AND LWL REFER TO HIGHER HIGH WATER LARGE TIDE (HHWLT) AND LOWER LOW WATER LARGE TIDE (LLWLT) RESPECTIVELY

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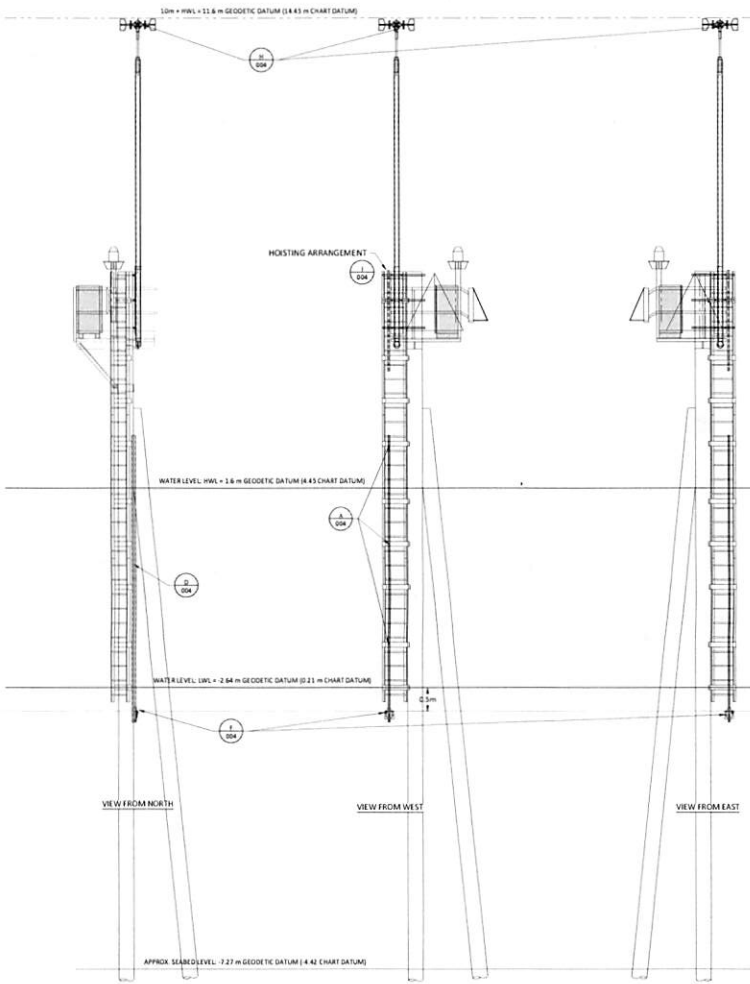
| REVISIONS | |
|-----------|-------------|
| 1 | 11 MAY 2020 |
| 2 | 11 MAY 2020 |
| 3 | 11 MAY 2020 |
| 4 | 11 MAY 2020 |
| 5 | 11 MAY 2020 |
| 6 | 11 MAY 2020 |
| 7 | 11 MAY 2020 |
| 8 | 11 MAY 2020 |
| 9 | 11 MAY 2020 |
| 10 | 11 MAY 2020 |

| DRAWING INFORMATION: | |
|----------------------|---------------|
| DATE | 12 Jun 2020 |
| DESIGNED BY | ADR |
| DRAWN BY | FRJ/CM |
| CHECKED BY | GMS/GFL |
| SHEET SIZE | D (27" x 34") |

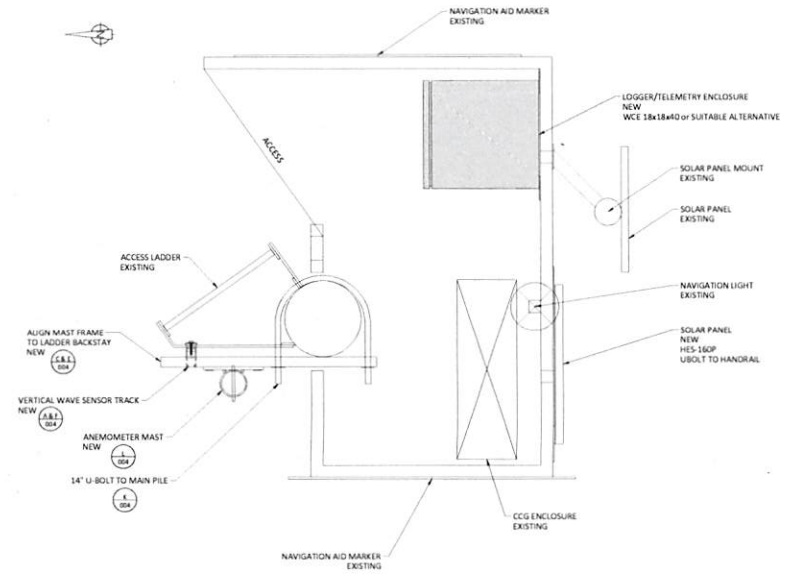
CITY OF SURREY OCEANMET DETAILED DESIGN

 CRESCENT BEACH STATION
 PLAN AND ELEVATION VIEW

| | |
|----------------|------------------|
| PROJECT NUMBER | 1064 004 |
| DRAWING NUMBER | 1064 004 002 002 |
| SHEET NUMBER | 002 |
| REVISION | 1 |



ELEVATION VIEW: CRESCENT CHANNEL STATION
1:50



PLAN VIEW: CRESCENT CHANNEL STATION
1:10

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| REVISIONS | |
|-----------|-------------|
| 1 | EMIT FILE |
| 2 | 13 JUN 2020 |
| 3 | 13 JUN 2020 |
| 4 | 13 JUN 2020 |
| 5 | 13 JUN 2020 |
| 6 | 13 JUN 2020 |
| 7 | 13 JUN 2020 |
| 8 | 13 JUN 2020 |
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| 45 | 13 JUN 2020 |
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| 47 | 13 JUN 2020 |
| 48 | 13 JUN 2020 |
| 49 | 13 JUN 2020 |
| 50 | 13 JUN 2020 |

| DRAWING INFORMATION | |
|---------------------|---------------|
| DATE | 12 Jun 2020 |
| DESIGNED BY | ADR |
| DRAWN BY | PFR / CSM |
| CHECKED BY | GMG/GFL |
| SHEET SIZE | D (22" x 34") |

CITY OF SURREY OCEANMET DETAILED DESIGN

CRESCENT CHANNEL STATION
PLAN AND ELEVATION VIEW

| | |
|----------------|------------------|
| PROJECT NUMBER | 1094 010 |
| DRAWING NUMBER | 109410A 2001 010 |
| SHEET NUMBER | 003 |
| REVISION | 1 |

Schedule C

(DFO CCG Access Protocol)

SCHEDULE C

(DFO CCG Access Protocol)

The DFO CCG Access Protocol is for access, security and safety in and around the building and on the Licensed Area.

Specified, properly qualified individuals employed or contracted by the Licensee, and have obtained security clearance from the DFO Security Department shall be added to the approved access list for the Licensed Area and shall be afforded reasonable access to the Licensee's Equipment at all times.

The Licensee, its technicians and contractors will comply with all conditions which are set out as follows:

1. Prior to making a site visit, the Licensee must provide a minimum of 72 hours prior notice to DFO CCG.
2. In the case of emergency, the Licensee must provide at least 1 hour prior notice to DFO CCG.
3. Access to the Licensed Area is restricted to the Licensee, its technicians and contractors and is to be for the purpose of installation, removal, replacement, maintenance, operation and repair of the Licensee's Equipment.
4. All keys and cards required to access the Licensed Area will be provided to the Licensee for the Term of this Agreement.
5. No persons employed or contracted by the Licensee will be allowed climbing access to the DFO CCG radio tower, unless escorted by CCG personnel or have obtained preapproval by the CCG Outside Plant prior to the visit.

DFO CCG Contact:

Trevor Klassen, ASCT

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